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ABSTRACT

A self-instructional approach used at Central Michigan University to teach basic broadcasting techniques to students in a basic production course is described in this paper. Separate sections discuss the following topics: (1) problems involved in attempting to provide large numbers of students with hands-on training in broadcast production; (2) selection of a self-instructional approach to learning based on the viewing of videotape presentations; (3) selection of the area of television production equipment operations for a pilot quasi-research study on the effectiveness of the self-instructional approach; (4) establishment of the television production unit; (5) instructional design, based largely on the use of mastery learning techniques; (6) expansion of the project to include radio and film instructional sequences; and (7) results obtained from an evaluation of the instructional method. Data are presented to show student levels of success in the individual components of the three units (television, radio, and film), and conclusions are drawn about areas of needed improvement. Appendixes, which comprise a major portion of the paper, present the basic production course syllabus, statements of educational objectives for each of 12 unit lessons, sample test items for the radio unit, illustrations and scripts used in the videotape presentations to explain console operations, and workbook pages dealing with console operations. (GT)

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SELF-INSTRUCTION IN BASIC BROADCASTING TECHNIQUES

Prepared for Presentation before the
Central States Speech Association

April 12, 1980

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Central Michigan University

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Through the past several years, the Department of Broadcast and Cinematic Arts at Central Michigan University (like other departments across the nation) has dedicated itself to providing a high minimum standard for hands-on training in broadcast production, as well as a maximum potential for students to proceed as far as individual capacities allow in exploring productional arts in a practical setting.

The Problem

The problem involved in trying to fulfill this desire is multifarious. Increasing enrollment has placed tremendous pressure on limited facilities. Simple expansion of facilities would not be enough to solve the onrushing dilema. Greater use of facilities in radio, television, and film by untrained students was easily translated into increased equipment down-time caused by misuse of the facilities. Several needs were determined:

1. Inability to increase engineering personnel required that equipment down-time be drastically minimized.
2. A consistent model of equipment operations behavior had to be established for the students who were learning from several different instrucstructors of varying capacities.
3. Enrollment increases far exceeding ability to increase instructional staff dictated a requirement for minimal instructor time to be expended teaching equipment operations within the classroom setting.

4. Students entering the program have a much broader diversification of prior experience in radio, television, and film through high school programs and individual experiences thus requiring an ability to test for prior skills on a competency basis.
5. As national competition in the job market has increased, students with ever greater productional skills have been successful in securing employment. What was sufficient even five years ago is not enough.

Fulfilling the Needs through Self-Instruction

It was clearly evident that all students would have to be brought quickly to a point of minimal practical knowledge in equipment operational techniques, and that this would have to be accomplished primarily through the student's own initiative. A self-instructional approach to learning appeared to be the most viable solution.

With self-instruction as the apparent instructional goal, the primary task was to select which medium or media were to be used. Many are available, each with strengths and limitations. The final decision was made based upon five criteria:

1. Visual as well as auditory instructional stimuli;
2. Capacity to demonstrate processes as well as end results;
3. Consistency of presentational mode for ease of student progress in learning the materials and techniques;
4. Maximum capability for student access to instructional materials with minimal chance of program presentation failure; and

5. The most cost-effective approach that would most likely fulfill the above four points.

With these criteria in mind, videotape presentation was selected, using 3/4" color cassette format. Central Michigan University has a Self-Instructional Systems Center (SISC) housed in the library with adequate videocassette carrels to meet the needs of the projected 126 students per semester who would be viewing the nearly 14 hours of instruction that would be prepared.

A Two Step Plan of Implementation

It was determined that one of the three areas of radio, television or film would be selected for pilot quasi-research study. If, after a year's use and evaluation, the project appeared feasable, the other two areas would be added.

Television was the area chosen for several reasons for this first step. It was known, in the basic broadcast production course which treated both radio and television, that most students had no prior knowledge of television production equipment operations. Also, of the three areas, television equipment was the most vulnerable to costly maintanance and repair when misused and TV equipment downtime was most costly in terms of loss of productions instruction to classes. A third reason for selecting the area of television was it was here that the need was greatest for increasing student experience through participation in a greater number of in-class production assignments.

The only major task remaining was to carefully differentiate between what was considered equipment operational techniques and

what was production aesthetics and creative rational. This task was not as simple as it might appear, since the two do not have a distinct point of seperation in all areas.. Ultimately, in some cases, the decision could not be made until after lengthy discussion over specific performance goals or objectives for each program.

The Procedure

At the time this project was initiated, the basic radio and television production materials were taught in a single four-credit course. No prior training was required and none was assumed. Basic film production was taught in the same manner, but in a seperate course. The radio/TV course was required of all majors and minors in the program whereas the film course was an option on several of the curricula the students could follow. It was felt unwise to change the structure of the production sequence until after the pilot study involving the television equipment operations was found feasable.

With this in mind, a production unit was established in the Fall of 1979 using students registered for television practicum. The goal of this unit was to research materials, establish performance objectives, prepare scripts, and produce a series of programs that would allow learning of television equipment operations by students on an individual instruction basis. It was determined that the learning must be broad enough to cover a variety of makes and models, yet specific to the equipment within the production program at CMU. The series took a full year to prepare and produce. The utilization of students in all phases of the programs was of vital importance in determining many factors, including

pacing, presentational style, and specifics of language and demonstration.

The series, "Behind the Incredible Eye", treats a specific piece of the production equipment in each program. Examples are: The camera and lenses, black and white shading, and the switcher and special effects generator.

Students in the basic radio/television production course were exposed to this series as their principal means of learning the equipment operations throughout the entire 1978-79 academic year. Because of the need to give all students more productional experience within the class time, no control group was established to formalize evaluative measures. However, careful observation of all students by the course instructors (eight sections totalling over 120 students in the year) determined that students could learn the equipment operations as readily as through normal lecture-demonstration procedures of prior years. The major result, in fact, was that students were able to operate the television lab facilities without direct faculty supervision and there were no major equipment failures attributable to student misuse. In that year, more students were taught basic production than at any previous time at CMU, with fewer logged hours of television equipment down-time and with significantly more in-class time devoted to production experiences.

General Concepts of Instructional Design

One of the fundamental concepts of instructional design is mastery learning. A course or program is structured so that students have mastered the content when they have completed the course.

Since students are not of equal ability, instruction must be individualized so each student can go at his/her own pace and those experiencing difficulty will have a chance at mastery.

The first step in mastery learning is clear and precise statement of learning objectives, or performance objectives. Instruction is much more likely to be effective if the objectives are clear and specific before the instruction is designed. Instruction is meaningful to students if objectives are appropriate. If they aren't, students often can lose interest in the content and fail.

The actual design and production of the instructional materials must be precise. For each objective defined, the instructional designer must consider what activities and information the student should go through in order to attain mastery of that objective. The instruction is then designed so the student does indeed go through those activities and information.

Finally, once the program or course is produced, it must be evaluated. One can never be completely sure that the mediated self-instruction will be as effective as necessary for mastery, so it must be evaluated. This evaluation is based upon student attainment of each objective. Such formative evaluation is not an easy task, both in terms of statistical procedures and in terms of the ego og the instructional designer. However, the goal must always be the effective learning of materials to mastery by the student. So when students have difficulty obtaining a specific objective, then the instruction for the objective must be revised.

Expansion of the Project

In light of the results of the television series and its effect on increased learning in the television portion of the basic production course, several actions were taken by the Broadcast and Cinematic Arts Department to put into plan the full operation.

The basic radio/television production course was seperated into three distinct courses, one of which incorporates film as well. A new course, Techniques of Radio/Television/Film, was designed as a prerequisite to the basic production courses in the three media. This new course formally seperates operational techniques from productional aesthetics.

A grant was secured from the Office of Instruction and Research at CMU to underwrite the costs of production of the learning materials for the new course. The principal method of learning is through self-instructional videotapes with the majority of class time devoted to evaluating student performance on the equipment. In the fifteen week semester, students spend five weeks each in radio, television, and fiom. Their involvement in each section of the course ends when they test-out satisfactorily on equipment operations, skills and knowledge.

The preparation of each of the programs in the radio and film instructional sequences followed an eight-step process of develop ment:

1. Careful preparation and determination of performance objectives for each program.
2. A detailed outline, clearly showing how each objective would be met instructionally.

3. Each program was then set in storyboard form with careful detail to all visual aspects.
4. Final script form specified shots and retained the storyboard picture.
5. Preparation of pre-production materials (slides, audiotapes, film).
6. Production of the program was done in carefully planned segments.
7. Post-production editing and assembly.
8. Duplication for student accession at the SISC unit in the library.

There are few decisions that were made that are of significance in the preparation of these programs, based on research findings of student learning needs as well as productional considerations. All audio dialogue for the programs was preproduced in tape and cartridge tape which was allowed to progress as it reached the point of need for support to the visual portion of the program. There is no -big-talking-face in any of the programs. The equipment is highlighted and models are used in non-speaking roles only where necessary. Slides were used for close-up details and were projected onto a screen instead of through the film chain, allowing for even closer examination by zooming in of the television camera. The scripts themselves were written with definite fade points planned for ease in post-production editing and assembly. Finally, student learning, rather than slick production, was the principal goal. Materials are presented in a straightforward manner with minimal distraction from production techniques.

The students are aided in their comprenhension of the materials by use of carefully planned workbooks in the radio and film segments of the course. These workbooks relate directly to the performance objectives and follow the order ofpresentation of materials on the tapes. The workbooks are designed, therefore, for the use of the student while viewing the program. When a student has difficulty in a part of the course, the workbook is the first item checked by the instructor.

Evaluation of the Instructional Method

Because of the need to implement the full course immediately, all students were placed into the new course and no control group was used. A formative evaluation of the first semester of the use of these instructional materials has yielded very encouraging data.

Of the 126 stud.ents originally registered for the course, 34 students, 27% of the total failed or withdrew. Although this figure may seem quite high at first glance, it is actually lower than the 35% attrition rate projected. The projected attrition was selected arbitrarily based upon a 14% attrition in the combined radio/TV production course which was comprised mainly of sophomore and junior students (because of course backlogging) and upon an almost 40% attrition rate among freshmen taking the Mass Media survey course. Since the new self-instructional course is designed for entering freshmen, a high attrition rate could be predicted upon the facy that many students would take the course to see if broadcasting was the field of study they really wanted. The results bear this expectation out. Out of the 34 students who did not complete

course, all but seven indicated they would select another field of study.

It is important to note that all three units of the course, radio, television, and film, must be satisfactorily completed for a students to receive credit for the course. Since the students are aware of this, many withdrew from the course if they failed an early unit in which they were placed.

It is interesting to note that no correlation of significance was found in measuring the length of time between student viewing of a particular program and his/her attempt to pass the competency tests for that program. There was no significant difference in the number of students failing or passing the first competency attempt in this regard.

However, in the radio section, especially, and also in the film section, there was a high correlation between successful demonstration of competency on the first attempt and the instructor's rating of the workbook for that program. Those students with "fair" or "poor" workbook ratings uniforly failed to pass the first attempt at demonstrating compentency in the radio section.

An analysis of data obtained on the individual units and programs within those units yields further information of value. Of the units, the radio section is the most difficult in terms of number of programs that must be viewed and equipment mastered. This is born out by reviewing the "Summary of Radio Unit Data". Fifteen of the 106 students who tried any part of the unit were unable to complete it. The programs with which they had the greatest difficulty were Console Operations III and IV. The

SUMMARY OF RADIO UNIT DATA

N Attempting any part of unit: 106

N Passing unit: 91

N Failing unit: 15

Table of Data (Radio)

Pgm.#/Part		Pass 1st Try N	%	Pass 2nd Try N	%	Pass 3rd Try N	%	Pass 4th Try N	%	Failed Out N	%
#1	W	82	77.4	18	17	5	4.7	0	0	1	0.9
	P	--	--	--	--	--	--	--	--	--	--
#2	W	78	73.6	18	17	7	6.6	0	0	2	1.9
	P	--	--	--	--	--	--	--	--	--	--
#3	W	80	75.5	18	17	3	2.8	0	0	1	0.9
	P	94	88.7	4	3.8	0	0	0	0	1	0.9
#4	W	51	48.1	42	39.6	4	3.8	1	0.9	5	4.7
	P	91	85.8	7	6.6	0	0	0	0	2	1.9
#5	W	50	47.2	34	32.1	8	7.5	1	0.9	8	7.5
	P	--	--	--	--	--	--	--	--	--	--
#6	W	82	77.4	14	13.2	1	0.9	0	0	5	4.7
	P	83	78.3	10	9.4	0	0	0	0	2	1.9
#7	W	97	91.5	5	4.7	0	0	0	0	0	0
	P	93	87.7	4	3.7	0	0	0	0	2	1.9
#8	W	78	73.6	17	16.0	1	0.9	0	0	5	4.7
	P	80	75.4	14	13.2	0	0	0	0	2	1.9

Legend: W= Written test
P= Practical test on the equipment

#1 - Microphones
#2 - Console Operations I
#3 - Console Operations II
#4 - Console Operations III
#5 - Console Operations IV
#6 - Tape Recording & Playback
#7 - Tape Editing
#8 - Audio Patching

disparity between the written and practical tests for the Console Operations III program (program #4) has led the researchers to institute an item analysis of the written test and review of the instructional tape. Initial adjustment has been made on one of the written test questions that was determined to be ambibuous. Additional reinforcement of learning may be needed for this program either by more detailed explanation on the taped program or by expansion of the workbook items. However, an initial measure that has been taken this semester has been to reemphasize the importance of careful completion of the workbook for this program. Many students were failing to complete the workbook carefully at this approximate point in the viewing of the tapes.

Three of the radio unit programs did not have practical tests in the first semester of the new course. Programs one and two, microphones and console operations I, do not require practical examination to demonstrate competency. Program #5, Console Operations IV, now does have a practical test with the addition of a new console in the radio laboratory. Until that event, the streophonic console discussed in that program was inaccessible to these students.

Finally, in the radio unit, the instructor indicated and the listing of dates programs were viewed supported, that many students were waiting until almost halfway through the five weeks of the unit before attempting compentency for any of the programs. This resulted in an inability to have sufficient time to complete the unit as prescribed in the course Syllabus.

The television unit of the course is the weakest in terms of maximizing potential for learning. This unit was the pilot for the

SUMMARY OF TELEVISION UNIT DATA

N Attempting any part of unit: 98

N Passing unit: 94

N Failing unit: 4

Table of Data (Television)

Pgm.#/Part		Pass 1st Try N	%	Pass 2nd Try N	%	Pass 3rd Try N	%	Pass 4th Try N	%	Failed Out N	%
#1	W	85	86.7	9	9.2	1	1.0	1	1.0	2	2.0
	P	89	90.8	6	6.1	0	0	0	0	0	0
#2	W	59	60.2	35	35.7	2	2.0	0	0	1	1.0
	P	90	91.8	4	4.1	0	0	0	0	0	0
#3	W	75	76.5	19	19.4	0	0	0	0	0	0
	P	92	93.9	2	2.0	0	0	0	0	0	0
#4	W	76	77.6	17	17.3	2	2.0	0	0	0	0
	P	--	--	--	--	--	--	--	--	--	--
#5	W	55	56.1	35	35.7	3	3.1	1	1.0	0	0
	P	--	--	--	--	--	--	--	--	--	--
#6	W	--	--	--	--	--	--	--	--	--	--
	P	93	94.9	1	1.0	0	0	0	0	0	0

Legend: W = Written test

P = Practical test on the equipment

#1 - The TV Camera

#2 - Black & White Shading

#3 - The TV Switcher & SEG

#4 - Lighting for Television

#5 - The TV Film Chain

#6 - The Floor Manager

course development. There is no workbook in use for this unit and most of the programs need to be rewritten and re-produced based on knowledge gained during the past two years. Also, the television programs are in black-and-white and of relatively poor technical quality. In addition, some of the equipment covered in those programs is not readily accessible to students within the department. These tapes will be updated within the next several months. It is known that a significant factor in the passing rate of students in this unit is the expertise of the instructor in the lab who has demonstrated the use of the equipment now in place for the students.

The "Summary of Film Unit Data" yields one most significant factor immediately: this is by far the shortest unit of the course in terms of number of programs and materials covered. In this unit, students appear to have the greatest difficulty with the programs on cameras and lenses and lighting for film. It is noteworthy that no students who attempted compentency in this unit failed to achieve it. Probably the most significant factor is the low number of programs and therefore the low number of competency tests that must be given. A lot more time is available for the lab instructor to explain and demonstrate the concepts and the instructor did so. This would seem to contaminate any statistical data as to the taped programs themselves; however, completeness of the workbooks in this unit as well as data gathered on length of time spent viewing the tapes indicate that students tended to spend more time viewing the individual tapes in this unit than they did the other two units. Two factors for this were noted in comments made by the students to

SUMMARY OF FILM UNIT DATA

N Attempting any part of unit: 104

N Passing unit: 104

N Failing unit: 0

Table of Data (Film)

Pgm.#/Part		Pass 1st Try N	%	Pass 2nd Try N	%	Pass 3rd Try N	%	Pass 4th Try N	%	Fail Out N	%
#1	W	86	82.7	16	15.4	2	1.9	0	0	0	0
	P	104	100	0	0	0	0	0	0	0	0
#2	W	91	87.5	13	12.5	0	0	0	0	0	0
	P	104	100	0	0	0	0	0	0	0	0
#3	W	85	81.7	19	18.3	0	0	0	0	0	0
	P	104	100	0	0	0	0	0	0	0	0
#4	W	99	95.2	5	4.8	0	0	0	0	0	0
	P	104	100	0	0	0	0	0	0	0	0

Legend: W = Written test
P = Practical test on the equipment

#1 - Cameras & Lenses

#2 - Film Stocks & Tripods

#3 - Lighting for Film

#4 - Film Editing & Projectors

the researchers and the lab instructor: fewer students were familar with the information contained within the tapes because of apparent lack of prior experience in film; and students felt they could afford to spend more time viewing the tapes because there were fewer programs in the unit.

One significant factor is the 100% passing rate on all of the practical exams on the forst attempt. This would seem to indicate lack of purely objective, non-interference, testing by the young instructor. Observation of this section during this current semester has supported this and the techniques of practical testing have been altered.

Conclusions

The radio unit, where students might be expected to have the greatest amount of prior practical experience (due to strong radio programs in many high schools in the mid-west), is the hardest unit to successfully demonstrate competence. The film unit appears to be the easiest. There is a direct correlation between the number of programs, and therefore competency tests must be mastered, and the failure rate for the unit. This suggests an imbalance in the course itself that may have to be adjusted. However, given the current structure of the course, five weeks in each unit with rotation among units, this would appear to be most difficult to correct. Information gained to date through evaluation of the course has clearly shown areas of needed improvement that have been discussed above.

The final evaluation must ultimately be determined over the course of two years and will actually be a direct answer to a

very pragmatic question: "Can the curriculum, revised, guarantee the required student learning, with minimal expenditure of instructor time in teaching equipment operation, and with more comprehensive understanding of production aesthetics in radio, television and film by each student who passes the sequence of courses?" Indications are that the answer will be "yes". Students entering basic radio, television, and film production courses (beginning January 1980) were all required to have successfully completed the new Techniques in Radio/Television/Film course as it is offered through self-instruction. The results are:

(1) No in-class instructor time spent in teaching equipment operations,

(2) An increase of three radio projects, two television projects, and one possible film project over what was possible in their prior teaching of the courses,

(3) Immediate reduction and/or elimination of the prior backlog of students trying to enter the courses, due in large part to the fact that students cannot take them now merely to see if that's what they want to pursue as their course of study, and

(4) A general increase in instructir expectations and student performance in the highly subjective area of production aesthetics.

As the new curricular sequence is now designed, each student must successfully pass all three parts of the new techniques course before being allowed in the basic production oucrses. Instruction in the production courses can be devoted fully to aesthetics and not equipment operations. The result should be students more fully capable of all aspects of radio/television, and film production, hopefully released from technical limitations and more creative in their thinking, more thorough in their planning, and more attractive to prospective employers.

APPENDICES

A. SYLLABUS FOR BCA 121 COURSE

B. STATEMENTS OF OBJECTIVES FOR RADIO,TELEVISION, AND FILM

C. TEST ITEM EXAMPLES FOR RADIO

D. PORTIONS OF CONSOLE OPERATIONS I AND II SCRIPTS

E. WORKBOOK PAGES FOR CONSOLE OPERATIONS I AND II

BCA 121 -- Techniques in Radio/Television/Film

SYLLABUS

Course Coordinator:
Dr. Jerry Henderson
342 Moore Hall

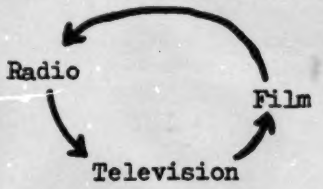
Instructors:
Ray Ford - Film
Bill Keiser - Radio
Mike Walenta - Television

TEXTS: Workbook for "Audio Techniques in Broadcasting"
Workbook for "Broadcast Film Techniques

Techniques in Radio/Television/Film (BCA 121) is a prerequisite to the basic production courses in radio, television, and cinematography in the Broadcast and Cinematic Arts curriculum. The course is divided equally into the three units of radio, television, and film.

SUCCESSFUL COMPLETION OF ALL THREE UNITS IS REQUIRED FOR COURSE CREDIT.

Each unit of the course is five weeks long. Each class section meets for one two-hour period per week. Students will rotate as entire class sections from unit to unit until all three units have been encountered. The rotation schedule is diagrammed below:



Dates for the start of each new unit in rotation are:

(1) Week of August 27
(2) Week of October 1
(3) Week of November 5

The Approach to Learning

The course is designed on the concept of mastery of materials. There are two basic assumptions underlying the learning methodology of the course:

(a) Different students enter the course units with varying levels of competency in equipment use.
(b) Students will be able to master the materials for the course at varying rates of speed.

The approach to learning in the three units of this course is centered on produced videotapes available in the Self Instructional Systems Center (SISC) on the ground floor in Park Library. Each student is expected to view the tapes at SISC as the primary source of instruction. Class time will be devoted to brief demonstrations, answering questions arising from viewing the videotapes, and competency testing on an individual basis.

Attendance

Prompt attendance is mandatory for all students at the first class meeting of each unit of the course and at all successive class meetings until the student has demonstrated mastery of the materials for that unit.

Demonstration of Learning — Mastery of the Materials

Each student in the course will be required to demonstrate mastery of materials through either or both of two different testing techniques:

(a) Written examinations
(b) Demonstration of abilities before the instructor

Each unit of the course is designed with several distinct parts. Mastery must be demonstrated in all parts for successful completion of a unit. All three units (radio, television, and film) must be completed successfully for credit in the course.

HOW TO DO IT:

The parts for each unit may be discerned by noting the titles of the SISC videotapes listed later in this syllabus.

For each part, the student should take the following steps:

1. View the videotape
2. Complete the necessary information in the workbook relating to that part (where appropriate).
3. Practice the particular skill(s) using materials and/or equipment provided by the instructor or available in the radio/television/film laboratories in Moore 121 and Moore 123.
4. When ready, ask the unit instructor for the competency tests for that part.

Each student will receive immediate feedback from the unit instructor as to successful or unsuccessful demonstration of learning. When deemed appropriate, remedial measures may be recommended for a particular unit or part.

Grading:

Successful completion of each unit of the course will be noted in the class list maintained by the course coordinator. A grade of CREDIT ("CR") will be given at the end of the semester for students successfully completing all three units of the course. A grade of NO CREDIT ("NC") will be given for students not successfully completing all three units of the course. There will be no partial credit if all three units are not completed successfully. There will be no incompletes given. All three units of the course must be mastered by the end of the semester.

In the case of materials not mastered within the regular class weeks of a particular unit, attempts to complete competency testing may be allowed at the discretion of the unit instructor only upon prior approval and with specific appointment.

Problems:

Any problems relating to the course, the method of instruction, competency testing, etc. should be discussed first with the instructor for the specific unit involved.

If a student desires further discussion, Dr. Henderson, the course coordinator, should be contacted. Dr. Henderson may be contacted at his office in 342 Moore (phone: 774-3851). His office hours are posted on the office door.

UNITS OF TECHNIQUES TAPES AT SISC

	Title	Accession Number
I.	RADIO ("Audio Techniques in Broadcasting")	
A.	Microphones	503-3467
B.	Console Operations I	503-3468
C.	Console Operations II	503-3469
D.	Console Operations III	503-3470
E.	Console Operations IV	503-3471
F.	Tape Recording & Playback	503-3472
G.	Tape Splicing	503-3473
H.	Audio Patching	503-3474
II.	TELEVISION ("Behind the Incredible Eye")	
A.	The Camera...and Moves it Makes	503-1696
B.	Black & White Camera Shading	503-1697
C.	The TV Switcher/Fader & SEG	503-1698
D.	The Floor Manager	503-1699
E.	Lighting for Television	503-1700
F.	Microphones in Television	503-1702
G.	The MHTV Slide/Film Chain	503-1703
III.	FILM ("Broadcast Film Techniques")	
A.	Super-8 Cameras and Lenses	503-3475
B.	Film Stocks and Tripods	503-3476
C.	Lighting for Film	503-3477
D.	Film Editing and Projectors	503-3478

SISC PRODUCTION UNIT

PROGRAM #1 MICROPHONES

The following are the objectives for the program:

1. Given a description of a microphone application, the student will be able to correctly indicate which kind of microphone would be most appropriately used and would be able to identify such a microphone by specific model.

   a. The student will be able to list the three major kinds of microphones most commonly used in broadcasting.
      1. Velocity (Ribbon)
      2. Dynamic (Pressure)
      3. Condenser (Electrostatic)

   b. The student will be able to identify each of the three types based upon a description of their basic electronic operating characteristics.

   c. The student will be able to identify each of the three types based upon their key physical construction characteristics.

   d. The student will be able to specify which kind of microphone it is.

2. Given a description of microphone application, the student will be able to correctly indicate which kind of polar pattern would be most suitable.

   a. The student will be able to draw a diagram for each of the different microphone polar patterns; and, conversely, given a drawing, will be able to correctly identify which it is.

      1. Omni-directional (non-directional)
      2. Bi-directional (figure eight)
      3. Uni-directional

         (a) Cardioid
         (b) Super-cardioid (cottage loaf)
         (c) Elliptical

3. The student will be able to correctly indicate which kind(s) of microphone support(s) will be most suitable, given a specific application.

   a. The student will be able to list the different kinds of rigid microphone supports used in broadcasting most commonly.

   b. The student will be able to list the different kinds of flexible microphone supports most commonly used in broadcasting.

   c. The student will be able to list the different kinds of personal microphone supports used most commonly in broadcasting.

SISC PRODUCTION UNIT

PROGRAM #2 CONSOLE OPERATIONS I

The following are the objectives for this program:

1. The student will be able to state the purpose of a broadcast console.

2. The student will be able to list examples of low-level and high-level inputs used with a broadcast console.

3. Given a specific console configuration, the student will be able to draw a block diagram of the key operating components of that console.

   a. The student will be able to state that a console configuration consists of inputs, channels, and outputs.

   b. The student will be able to identify and place in the proper location on a block diagram the key components of a typical broadcast console channel.
      (1) Input select switch
      (2) Pre-amplifier (microphone channels only)
      (3) Potentiometer (Pot)
      (4) Key switch

   c. The student will be able to identify and place in the proper location on a block diagram the key components of a broadcast console output.
      (1) Program bus and audition bus
      (2) Program amplifier and audition amplifier
      (3) Transmitter
      (4) VU Meter
      (5) Monitor circuit
          (a) Monitor amplifier
          (b) Monitor gain pot
          (c) Headphones
          (d) Studio loudspeaker

   d. The student will be able to identify and place in the proper location on a block diagram the key components of a broadcast console cue circuit.
      (1) Cue bus
      (2) Cue amplifier
      (3) Cue gain pot
      (4) Headphones
      (5) Cue speaker

BCA 121 - Techniques of Radio/Television/Film

Objectives

SISC PRODUCTION UNIT

Program #3 CONSOLE OPERATIONS II

The following are the objectives for the program:

1. Given an outline drawing of the RCA console in Moore 123 or given access to the RCA Console in Moore Hall 123 (TV Laboratory), the student will be able to identify the following:

   a. Microphone inputs, including input select, pot, and key controls

   b. Turntable inputs, including input select, pot, and key controls

   c. CTR inputs, including input select, pot, and key controls

   d. Tape inputs, including input select, pot, and key controls

   e. Remote inputs, including talkback, pot, and key controls

   f. Cue and monitor system activation switches, and gain controls

   g. VU meter selection switch

   h. Line output switches and master gain controls

   i. Headphone jack locations

BCA 121 - Techniques of Radio/Television/Film

Objectives

SISC PRODUCTION UNIT

PROGRAM #4 CONSOLE OPERATIONS III

The following are the objectives for this program:

1. Given an outline drawing of or given access to the RCA console in Moore 123, the Gates Yard console in Moore 121, the Sparta console used for WMHW remotes, and the Gates stereo console in WMHW Studio A, the student will be able to identify key operating parts including microphone input locations, controls for all channels, output controls, cue and monitor circuit controls, and headphone jack locations.

   a. The student will be able to identify the following on the Gates Yard console in Moore 121:
      (1) Microphone inputs, including pot and key controls
      (2) Turntable inputs, including pot and key controls
      (3) CTR inputs, including pot and key controls
      (4) Tape inputs, including input select, pot, and key controls
      (5) Cue and monitor system activation controls and gain controls
      (6) Output circuit controls, including master gain and VU meter
      (7) Headphone jack location

   b. The student will be able to identify the following on the Sparta console used for WMHW remotes:
      (1) Microphone inputs, including input select and pot
      (2) Turntable inputs, including input select and pot controls
      (3) CTR input, including input select and pot controls
      (4) Tape input, including input select and pot controls
      (5) Output select controls and VU meter and master gain control
      (6) Headphone jack location
      (7) Cue and monitor system controls

BCA 121 - Techniques of Radio/Television/Film

Objectives

SISC PRODUCTION UNIT

PROGRAM #5 CONSOLE OPERATIONS IV

The following are the objectives for the program:

1. The student will be able to identify the following on the Gates stereo console used in WMHW Studio A:

   a. Microphone inputs, including input select controls, mono/stereo select controls, pot and key controls.

   b. Turntable inputs, including input select controls, pot and key controls.

   c. CTR and tape inputs, including input select controls, pot and key controls.

   d. Remote input controls, including talkback, pot, and key controls.

   e. Cue and monitor system activation and gain controls

   f. Stereo left and right channel master gain controls

   g. Talkback system controls

   h. Headphone jack locations

2. Given a specific characteristic, the student will be able to indicate whether it is common among all four consoles used in programs of this series or whether it is unique to one or more and, if unique, to which console(s) does it apply.

BCA 121 - Techniques of Radio/Television/Film

Objectives

SISC PRODUCTION UNIT

PROGRAM #6 TAPE RECORDING AND PLAYBACK

The following are the objectives for this program:

1. The student will demonstrate the appropriate procedure for recording program material and playing back previously recorded material on the Ampex 602 tape recorder.

   a. The student will be able to identify the location of input and output jacks

   b. The student will be able to identify the location and function of the tape transport switches.
      (1) Play/Record/Stop switch
      (2) Fast forward/rewind switch
      (3) Record safety button
      (4) Tape speed control switch

   c. The student will be able to identify the location and function of the preamplifier electronic controls and switches
      (1) Output select switch
      (2) VU Meter
      (3) Record safe/ready switch
      (4) Recording light indicator
      (5) Input gain controls
      (6) High/low speed equalization switch
      (7) Recorder on/off switch

   d. The student will be able to identify the location of the headphone jack

   e. The student will be able to identify the recorder heads

   f. The student will be able to properly thread tape on the recorder.

3. The student will demonstrate the appropriate procedure for recording program material and playing back previously recorded material on a broadcast cartridge tape recorder.

   a. The student will be able to identify the location of input and output jacks

   b. The student will be able to identify the location of the CTR start, stop, and record switches

   c. The student will be able to identify the location and demonstrate the function of the cartridge secure/release mechanism.

3. d. The student will be able to identify the location and demonstrate the function of the input gain control.

   e. The student will be able to state that all tape cartridges must be erased (bulk erased) before attempting to record on them.

4. The student will demonstrate the proper procedure for cleaning tape recorder and cartridge tape recorder heads.

BCA 121 - Techniques of Radio/Television/Film

Objectives

SISC PRODUCTION UNIT

PROGRAM #7 TAPE SPLICING

The following are the objectives of this program:

1. The student will be able to list the purposes of splicing audio tape:

   (a) Place leader tape at the beginning of recorded program material

   (b) Place leader tape between different segments of recorded program material when necessary for visual identification

   (c) Edit out unwanted portions of recorded program materials

2. Given two pieces of audio recording tape and access to a splicing block, the student will be able to demonstrate how to properly splice the two pieces of tape together.

   a. The student will be able to identify the tools needed for splicing tape (splicing block, razor blade, splicing tape)

   b. The student will demonstrate on which side of the recording tape the splicing tape is placed

   c. The student will be able to demonstrate the appropriate way to place recording tape in the splicing block.

   d. The student will be able to demonstrate the proper way to use a razor blade with the splicing block

   e. The student will be able to demonstrate the proper method for applying splicing tape to the recording tape in the splicing block

   f. The student will demonstrate how to check the splice for physical correctness of the splice.

3. The student will be able to indicate the proper way to trim a tape splice by hand and when such trimming would be necessary.

BCA 121 - Techniques of Radio/Television/Film

Objectives

SISC PRODUCTION UNIT

PROGRAM #8 AUDIO PATCHING

The following are the objectives of this program:

1. The student will be able to state the purpose of audio patching

   a. To by-pass faulty equipment

   b. To temporarily add inputs or outputs to a console

   c. To expand console capabilities in selected situations

2. The student will be able to indicate typical inputs and outputs found at patch panel terminals.

   a. Turntable, tape recorder, and remote inputs

   b. Program and audition circuit outputs

   c. Special equipment inputs/outputs (eg. graphic equalizer, signal enhancer)

3. Given a drawing of a patch panel or given access to a properly labeled patch panel, the student will be able to demonstrate how to complete selected patching problems.

4. The student will demonstrate how to visually align a patch cord to avoid phasing problems.

BCA 121 - Techniques of Radio/Television/Film Objectives

PROGRAM #9 - BFT - FILM SUPER-8 LENSES AND CAMERAS

The objectives for this program are as follows:

1. Given an indoor and an outdoor filming situation, a selection of film stocks, and a Super-8 camera and tripod, the student will be able to prepare each of the scenes for shooting, including complete camera preparation.

2. The student will demonstrate how to load film into a Super-8 camera.

3. The student will demonstrate how to check camera batteries.

4. The student will demonstrate how to set camera film speed.

5. The student will demonstrate how to set focus properly.

6. The student will demonstrate how to determine proper f-stop.

7. The student will demonstrate operation of both manual and power zoom.

8. Given a specific film viewer need (e.g. "Cover shot of dining room" "close-up of beef on table," "medium shot of hostess as she gets up from table and moves toward kitchen door") the student will correctly state which lens would be most appropriate to use for the shot from among wide-angle, standard, and telephoto lenses."

9. The student will be able to state the generally accepted rational for using fixed-focal length as opposed to zoom lenses.

10. The student will be able to define depth of field and list the factors that affect (control) depth of field.

11. The student will be able to correctly list common f-stop calibrations for Super-8 camera lenses.

12. The student will be able to state and show understanding of reasoning that each successively higher f-stop number reduces available light to the film by 50 percent.

13. The student will be able to state that the lower the f-stop number, the more wide open the aperture of the lens; and, conversely, the higher the f-stop, the more closed down the aperture of the lens.

BCA 121 - Techniques of Radio/Television/Film Objectives

PROGRAM #10 - BFT- FILM STOCKS AND TRIPODS

The following are the objectives for this program:

1. The student will be able to list the different common film stocks used for Super-8 cinematography in the BCA program at CMU

2. Given two film speeds, indicate which requires the most (or least) light to adequately photograph a scene. The student will be able to state that the higher the ASA rating, the faster the film speed and therefore the less light needed to adequately photograph a scene; and conversely, lower ASA, slower film, more light needed.

3. Given factors, select color or black and white. Given three standard film shooting settings, the student will be able to state what factors must be considered in selecting color or black and white film, indoor or outdoor.

4. Given a specific filming situation, the student will be able to accurately select the correct film stock to be used in at least three settings: outdoor, sunny; outdoor, cloudy; and indoor.

5. Given a tripod, the student will be able to demonstrate proper adjusting and camera mounting technique and the use of the pan head.

6. The student will be able to state that the camera must always be checked for secureness of mounting to the tripod.

7. The student will be able to demonstrate proper adjustment of tripod legs for both level and sloping terrain.

8. The student will be able to state that a tripod must be used as much as possible for moving shots.

9. The student will state that the camera should never be carried over the shoulder on a tripod.

10. The student will state that a camera on a tripod must always be carried with one hand on the camera and one hand on the tripod.

PROGRAM #11 - BFT - LIGHTING FOR FILM

The following are the objectives for this program:

1. Given an in door or outdoor filming situation, the student will be able to light the set adequately and select the film stock appropriate to shooting the set.

2. The student will be able to list the different lighting instruments available in the BCA program for Super-8 filming.

3. The student will be able to state wattages of film lights available in the BCA program and correctly assess maximum appropriate circuit loads for lighting a scene.

4. The student will be able to demonstrate proper light placement for three-point and four-point lighting of selected filming situations.

5. The student will be able to list different light support mechanisms available to film in the BCA program and specify which is/are most likely to be needed in a given filming situation.

6. The student will be able to define "key", "fill", and "back" lighting and state the generally recognized purpose of each.

7. The student will be able to identify light meters available in the BCA program and demonstrate proper use of each different kind for film situations.

8. The student will be able to state the difference between "incident" and "reflective" light and that reflective light readings are generally used for film meter readings.

9. The student will be able to state that light meters must never be dropped.

10. Given a specific filming situation, the student will demonstrate proper use of the light meter and accurately state the correct f-stop setting of the lens to be used for a shot.

11. The student will demonstrate an ability to read the light meter scale correctly.

PROGRAM #12 - BFT - FILM EDITING AND PROJECTORS

The following are the objectives for the program:

1. Given three pieces of Super-8 film, the student will be able to properly splice the film together with one cement and one tape splice.

2. The student will demonstrate or state how to identify the emulsion side of the film

3. The student will demonstrate the proper technique of placing film in the editor.

4. The student will demonstrate how to make an even cut at the proper frame for splicing.

5. The student will demonstrate how to scrape off film emulsion cleanly at the splicing point.

6. The student will demonstrate how to apply cement properly to make a secure splice.

7. The student will demonstrate how to apply film splicing tape to make a secure splice.

8. The student will demonstrate a proper technique for testing the film splices.

9. The student will demonstrate proper technique for loading film in the Super-8 film viewer.

10. The student will demonstrate proper technique for marking the edition point using the film viewer.

11. Given a Super-8 movie projector used in the BCA program, the student will demonstrate how to load, thread, and show both silent and sound film.

12. The student will demonstrate proper sound control from a Super-8 projector.

13. The student will demonstrate proper threading of each projector of Super-8 film used in the BCA program.

14. The student will demonstrate proper frame and focus adjustment of the Super-8 projectors in the BCA program.

15. The student will demonstrate how to rewind film on the Super-8 projector.

BCA 121 EXAMPLES OF TEST ITEMS
RADIO

MICROPHONES

1. What kind of microphone is most likely wanted for the following specific needs? State both the kind and then give a specific example
   a. Console (Board) mike
   b. Sports play-by-play
   c. Two-person interview, in studio
   d. Recording a music concert
   e. Small choral group, in studio

2. Name the three kinds of microphones most commonly found in broadcasting.

3. What kind of microphone operates on a principle of a metal object moving in a magnetic field and uses a thin metallic ribbon?

4. Which kind of microphone uses a plastic diaphragm as a support for a wire in a magnetic field?

5. Which kind of microphone has a flat plate behind a flat diaphragm?

6. Which kind of microphone operates on a principle of concentration of electrons?

7. State by model number, at least two examples of each of the three kinds of microphone.

8. Which polar pattern is most suitable for a two-person interview?

9. Which type of polar pattern is most suitable for a board operator's mike?

10. Which kind of polar pattern is most suitable for play-by-play sports?

11. Draw the design of the following polar patterns:
    a. Omni-directional
    b. Bi-directional
    c. Cardioid
    d. Super-cardioid
    e. Elliptical

12. List three different kinds of rigid microphone supports.

13. List two different kinds of flexible microphone supports

14. List two different kinds of personal microphone supports

15. To record a small singing group, you need three microphones. What kind of supports are you most likely to mount them on?

16. What kind of microphone support is most desirable for the console (board) mike?

BCA 121 EXAMPLES OF TEST ITEMS

RADIO

CONSOLE OPERATIONS I

1. What is the purpose of a broadcast console?

2. List at least one example and at least three examples of low-level and high-level inputs into a console.

3. Draw a block diagram of a console with a 4-4-1 configuration with program, monitor and cue circuits. Identify major parts.

4. What are the three major components of a console "configuration"?

5. What are the key components of a broadcast console channel?

6. What are the key components of a broadcast console output system?

BCA 121 EXAMPLES OF TEST ITEMS
RADIO

CONSOLE OPERATIONS II

1. Identify the following on the RCA Console in Moore 123 (either at the console or on a diagram presented to the student:
   a. Studio mike and console mike input jacks
   b. Channels 1-8 pots
   c. Channels 1-6 input select switches
   d. Tape and CTR input select switches
   e. Remotes input select switches
   f. Channels 1-8 key switches
   g. Master Gains for program and audition busses
   h. Line output switches, line 1 and line 2
   i. Monitor select switch
   j. Monitor gain pot
   k. Cue gain pot
   l. Cue amp select switch
   m. VU Meter
   n. VU Select switch
   o. Headphone select switch and switched headphone jack
   p. Identify which channels have turntable, CTR and reel-to-reel inputs
   q. Demonstrate operation of talkback system

2. List, in order, the proper steps in cueing a record on a turntable
   a. Place record on TT
   b. Put TT in gear at proper speed
   c. Start TT motor
   d. Place needle at start of cut desired on record
   e. Stop record on TT at start of sound from cut
   f. Stop TT motor
   g. Turn record back to start of sound, then back ¼ turn

3. What is meant by "muting"?

4. When the board operator has his mike keyed on, the cue speaker is (CIRCLE ONE) muted; not muted.

BCA 121 EXAMPLES OF TEST ITEMS
RADIO

CONSOLE OPERATIONS III

1. Identify the key operating components on the Gates Yard console (See and use items from list for RCA Console that are appropriate)

2. Identify the key operating components of the Sparta Remote Console (See and use items from list for RCA Console that are appropriate)

3. Where does the cue system for the Gates Yard console begin for cueing channels?

BCA 121 EXAMPLES OF TEST ITEMS
RADIO

CONSOLE OPERATIONS IV

1. Give the students either a diagram drawing or access to the Gates Stereo Executive Console in WMHW-FM Studio A and have them identify the key components of the console, including:
   a. Microphone inputs, including input select switches, mono/stereo switches, pots and key switches.
   b. Turntable inputs, including input selects, pots, and key switches
   c. Tape inputs, including select switches, pots, and key switches
   d. Remote inputs, including select, pot, and key
   e. Cue system select and gain controls
   f. Monitor system select and gain controls
   g. Left and right channel master gains
   h. Line Amp switches
   i. Talkback system controls
   j. Headphone jacks and switches

2. State whether each of the characteristics below is common to all four consoles discussed in this course or whether it is unique to a single console by selecting the appropriate letter:

   a. Common to all four
   b. Unique to RCA
   c. Unique to Gates Yard
   d. Unique to Sparta
   e. Unique to Gates Stereo

   1. Low level and high level inputs
   2. Greatly underutilized with only one input wired per channel
   3. Output metering
   4. An excellent monophonic console
   5. No Input Select Switches on first four channels
   6. The only true remote console
   7. Stereo console
   8. Monitor and cue circuits
   9. An older, limited console
   10. No key switches
   11. Minimal broadcast capabilities
   12. Uses key switch to obtain cue
   13. Hooked to a patch panel
   14. Has two full mono outputs
   15. In its own designed cabinet with turntables attached

BCA 121 EXAMPLES OF TEST ITEMS
RADIO

TAPE RECORDING AND PLAYBACK

1. Demonstrate the proper procedure to bulk erase (degauss) reel-to-reel and cartridge tapes using either hand-held or table mount degausser.

2. Identify the following on the Ampex 602
   a. Output select switch
   b. VU Meter
   c. Record Safe/Ready switch
   d. Recording light indicator
   e. Input gain controls
   f. High/Low speed switch
   g. High/Low equalization switch
   h. Play/record/stop switch
   i. Fast-forward/rewind switch
   j. Record safety button
   k. On/Off switch

3. Identify the specific heads on the Ampex 602 recorder.

4. Demonstrate proper threading of tape on the recorder.

5. Given a record, a reel of tape, and access to the Ampex 602, have the student record a portion of the record on tape, then play it back for you.

6. Identify the following on the Tapecaster CTR:
   a. On/off switch
   b. Input and output jacks
   c. Start button
   d. Stop button
   e. Record set switch
   f. Record gain control
   g. Tape engage/disengage lever
   h. Tape heads

7. What must be done to a tape cartridge before it is recorded upon? (it must be bulk erased.)

8. Demonstrate the proper cleaning of tape heads.

BCA 121 EXAMPLES OF TEST ITEMS
RADIO

TAPE SPLICING

1. List at least three purposes of splicing audio tape

2. List the materials needed for splicing audio tape using a splicing block.

3. Give the student two pieces of audio tape and a piece of leader tape. Have the student splice the tapes together. Then check for physical correctness.

4. Have the student, using scissors, trim one of the tape splices by hand.

BCA 121 EXAMPLES OF TEST ITEMS
RADIO

AUDIO PATCHING

1. State at least three purposes for audio patching.

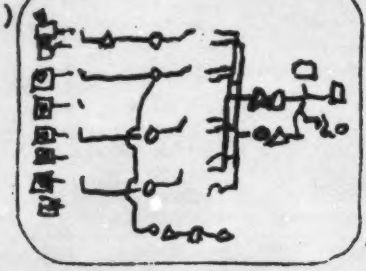
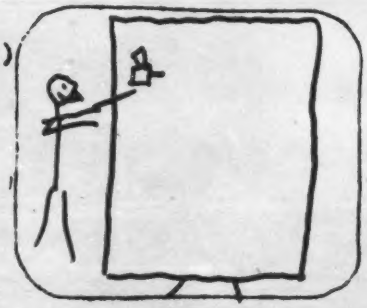
2. List typical inputs and outputs terminations you would expect to find in a patch panel

3. Give the student either a drawing of a patch panel with labeled terminals or a patch panel itself, labeled, and give them selected simple problems (at least two) such as:

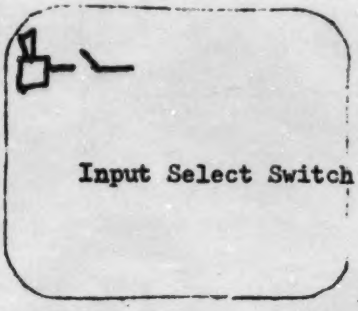
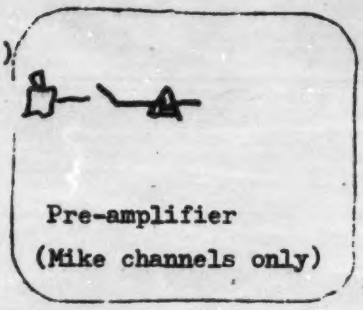
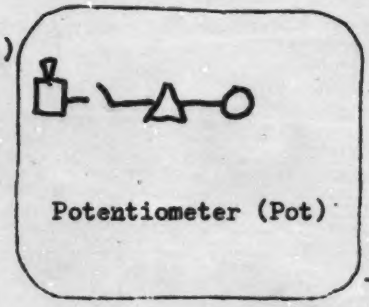
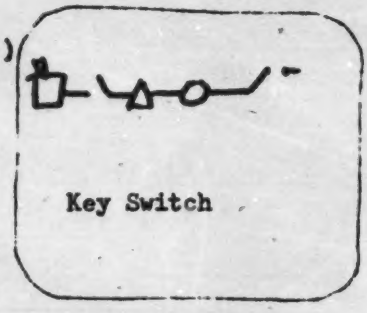
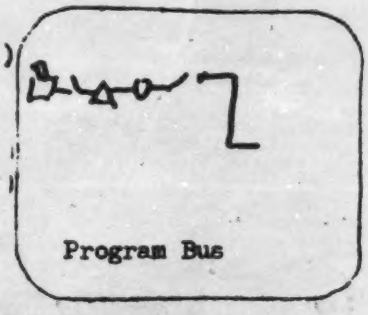
   a. Channel 3 doesn't work. Patch Turntable 1 into another channel
   b. The limiter has stopped working. Patch directly into the transmitter
   c. Patch the equalizer into the turntable two circuit.
   d. Patch the program output into a tape recorder.

   (THINGS TO CHECK FOR: (a) Proper terminals selected
   (b) Proper phasing (brass to brass) in plugs)

STORYBOARD

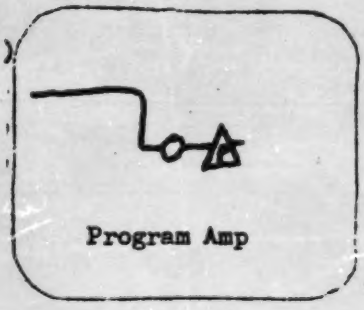
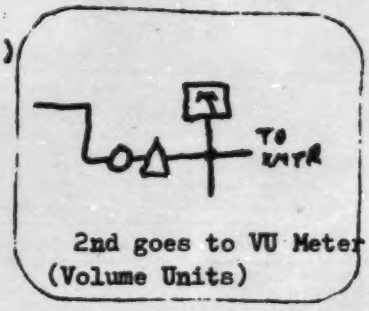
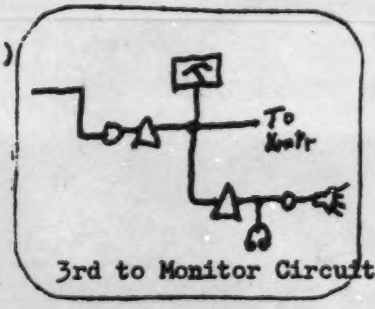
VIDEO	AUDIO
CHANGE C.G.	
(21) CONFIGURATION Inputs/Channels/Outputs	ANNCR: Consoles are configured, as we've seen, in terms of inputs, channels, and outputs. In discussing the logic of a console, we use numbers to refer to these parts.
CHANGE C.G.	
(22) Inputs/Channels/Outputs A 1-1-1 configuration	ANNCR: For example, a console with a 1-1-1 configuration has one input, one channel, one output. And that, for the next part of this program, is where we're going to start. A 1-1-1 console.
TK SLIDE	
(23) 	ANNCR: For ease in your note-taking, you should know that the final diagram you're going to finish with will look like this. Don't panic. By time we get there, you'll understand it fully.
TK C.G.	
(24) Block Diagram A Console with a 1-1-1 Configuration	ANNCR: Let's start at the beginning. We're going to show you a block diagram of a 1-1-1 configuration.
MS TALENT AT EASEL	
(25) 	ANNCR: Consoles consist of inputs, channels, and outputs. For the beginning, we're going to give our console one microphone input.

STORYBOARD

VIDEO	AUDIO
ZOOM IN TO MCU- OF EASEL (Stay on easel) KEY C.G.	(26) 
	ANNCR: That microphone input enters the console and goes to an input select switch. Note the way this switch is drawn. It's important.
CHANGE C.G.	(27) 
	ANNCR: After the input select switch, which is the first part of the channel, the signal goes to a pre-amplifier, or pre-amp. Pre-amps are found only in microphone channels.
CHANGE C.G.	(28) 
	ANNCR: Coming out of the pre-amp, the signal goes to a potentiometer, or pot. The pot controls the strength of the signal in this channel through the rest of the console.
CHANGE C.G.	(29) 
	ANNCR: After leaving the pot, the signal goes to the last part of the channel, the key switch. As with the input select switch, note the way this switch is drawn.
CHANGE C.G.	(30) 
	ANNCR: Leaving the key switch, the signal goes into a console output. The first part of this output system is, in this case, the program bus. (We'll add more passengers to this bus in a few minutes.)

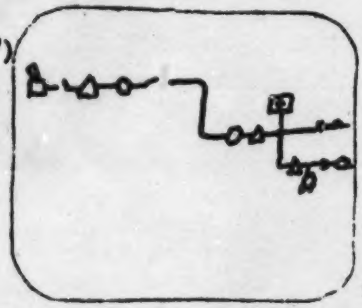
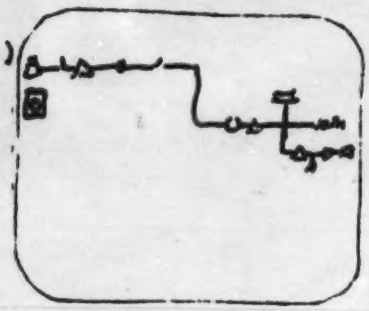
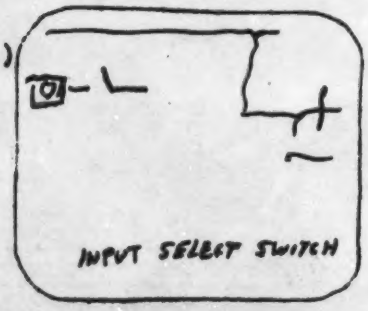
Key 2

STORYBOARD

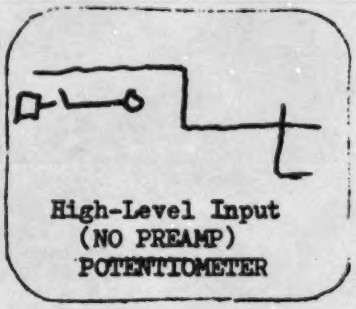
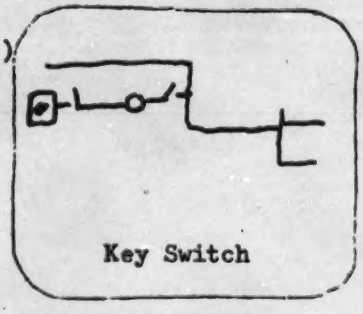
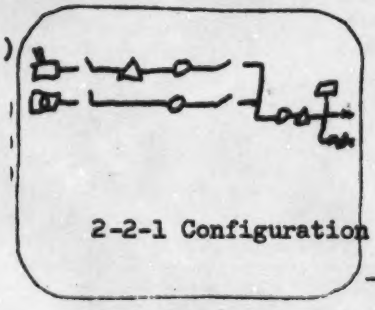
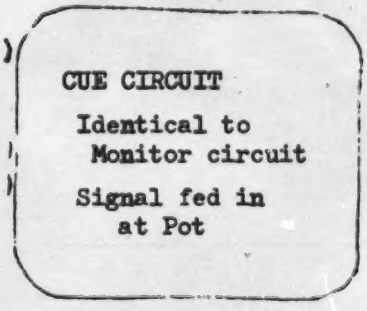
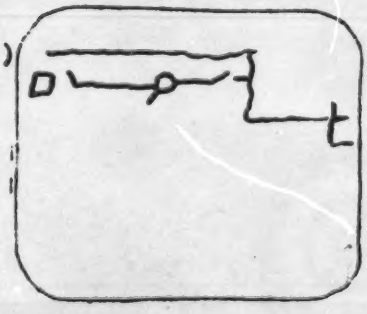
VIDEO	AUDIO
(MCU ON EASEL CONT'D) CHANGE C.G. (31) 	ANNCR: The first stop for the signal after getting on the program bus is the Master Gain Control.
CHANGE C.G. (32)  	ANNCR: From the master gain, the signal goes to the program amplifier. This boosts the signal up to the strength needed to send it out of the console.
CHANGE C.G. (33) 	ANNCR: Leaving the program amp, the signal splits three ways. The first leaves the console and goes on to the transmitter.
CHANGE C.G. (34)  	ANNCR: The second path from the 3-way split leads to the VU Meter. VU stands for volume units and is a measure of the strength of a signal.
CHANGE C.G. (35)  	ANNCR: The third path leads to the Monitor system. This system consists of : a monitor amplifier, jack for headphones, monitor gain control, and studio speakers.

Key C.G

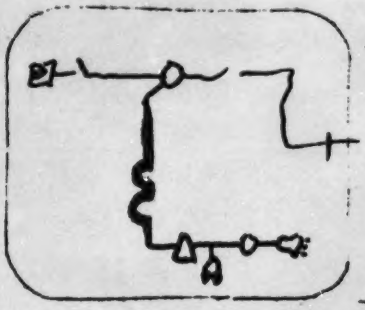
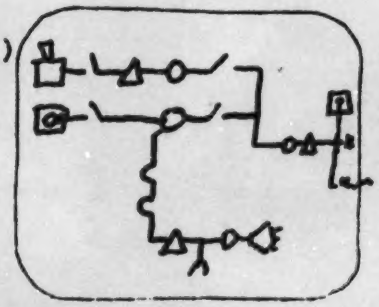
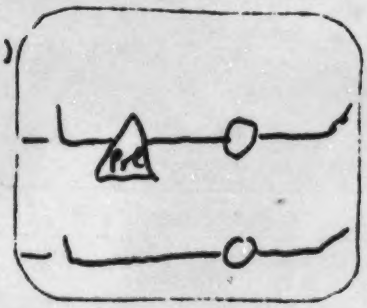
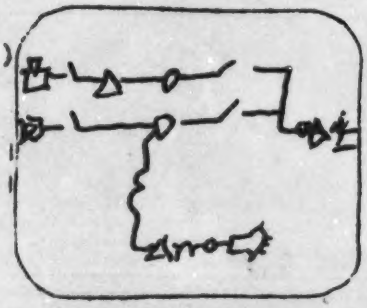
STORYBOARD

VIDEO	AUDIO
TK C.G. (36) MONITOR SYSTEM Hear what is mixed Muting when mike is turned on	ANNCR: The monitor system allows the console operator to hear what is being mixed in the console. You need to remember that when you turn on a microphone, the monitor speaker in that room cuts off to avoid feedback. This is called muting; and is why the operator wears headphones.
TK EASEL DRAWING (37) 	ANNCR: This, then, is a console with a 1-1-1 configuration. It has one input, one channel, and one output. We also have added the monitor system.
TK C.G. (38) Block Diagram 2-2-1 Configuration	ANNCR: Now, we're going to add a simple step to make this more truly a console. One more input and another channel will make it a 2-2-1 console.
TK EASEL DRAWING ZOOM IN TO MCU (39) 	ANNCR: For this discussion, let's give our console a turntable as its second input.
KEY C.G. (40) 	ANNCR: When the signal from the turntable enters the console, it, too first goes to an input select switch.

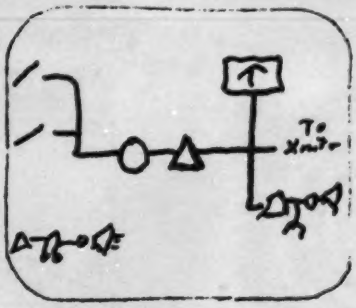
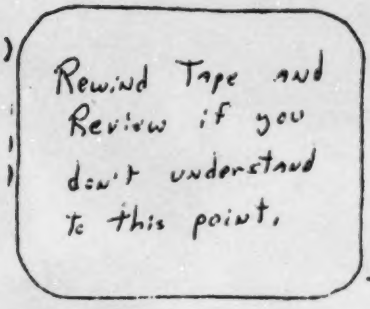
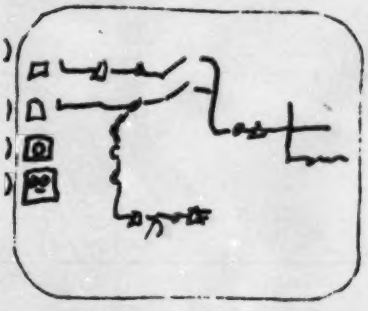
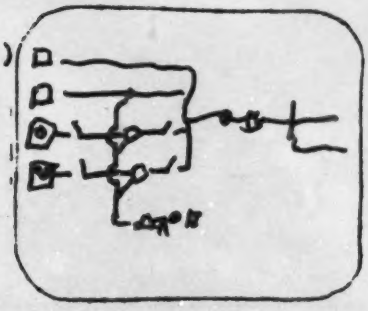
STORYBOARD

VIDEO	AUDIO
CHANGE C.G.	
(41) (✓) (✓) (✓) 	ANNCR: There is no preamplifier in this channel. It is a high-level input channel. Remember, only low level channels, microphone channels, need pre-amps. So here, the signal goes from the input select switch to the pot.
CHANGE C.G.	
(42) 	ANNCR: Only one more thing is needed to make this second channel complete: 5 the key switch.
CHANGE C.G.	
(43) 	ANNCR: Now we have a console with a 2-2-1 configuration. However, since we now have a turntable input, we need a way to cue the records. For this we'll add a cue circuit.
TK C.G.	
(44) 	ANNCR: The cue circuit is identical in its parts to the monitor circuit. The only difference is where the signal is fed in. Where the monitor circuit takes its signal after the program amp, the cue circuit starts at the high level input pots.
TK MCU EASEL	
(45) 	ANNCR: The cue circuit gets its signal here. There is a position of the pot that switches the signal into the cue circuit.

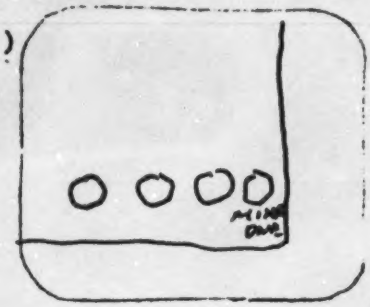
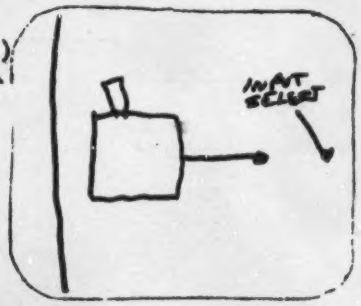
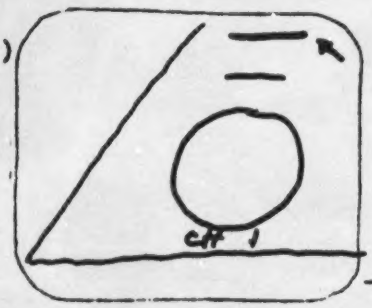
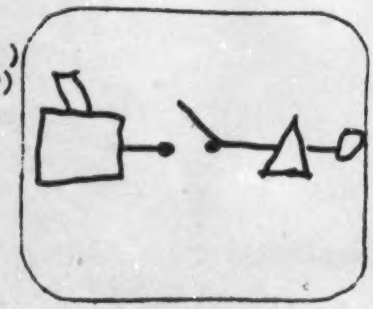
STORYBOARD

VIDEO	AUDIO
FOLLOW DRAWING ON EASEL (46) 	ANNCR: The cue circuit signal is fed from the channel pot into the cue amplifier; then to a headphone jack, and to the cue gain control; and finally to the cue speaker built into the console.
TK C.G. (47) Cue Circuit: Amplifier Headphone jack Cue Gain Control Cue Speaker Muting when mike on	ANNCR: This is the cue circuit. It consists of cue amplifier, headphone jack, cue gain, and a cue speaker in the console. As with the monitor circuit, the cue speaker is muted when the microphone at the console is switched on, to avoid feedback.
TK EASEL (48) 	ANNCR: Let's review quickly, before we complicate this block diagram any further. We now have a console with a 2-2-1 configuration. Two inputs, through two channels, to one output.
ZOOM IN ON CHANNEL 1 (49) 	ANNCR: Our first channel is a low level or microphone channel. Therefore, it has a pre-amp after the Input Select Switch.
ZOOM BACK (50) 	ANNCR: Other than that, both channels are identical, with input select switch, pot, and key switch.

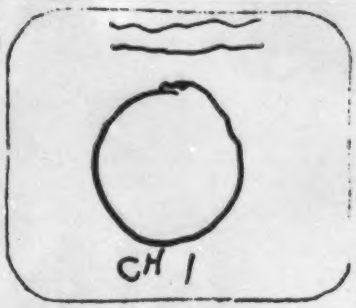
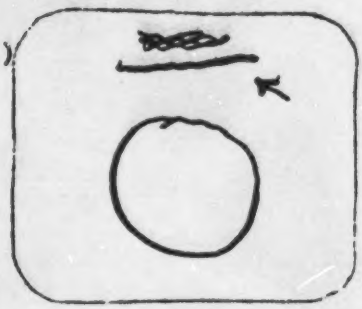
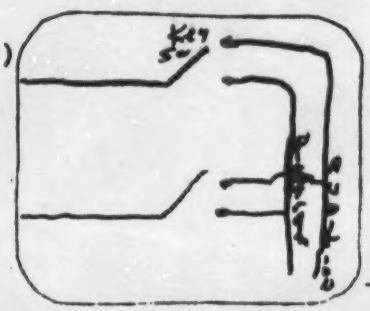
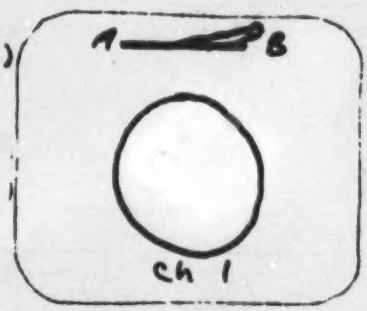
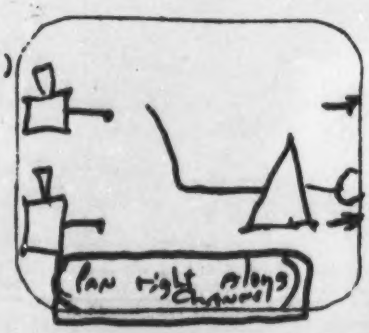
STORYBOARD

VIDEO	AUDIO
PAN RIGHT (51) 	ANNCR: When leaving the channels, the signal enters the program bus and is carried in turn to: Master Gain, Program Amp, and then a three-way split to transmitter, VU meter and Monitor circuit.
FOLLOW TALENT POINTING (52)	ANNCR: The monitor and cue circuits are identical in structure, each having an amplifier, a headphone jack, gain control, and studio speakers. The only difference is where the signal enters each of these circuits.
TK C.G. (53) 	ANNCR: If you understand this block diagram so far, the rest is easy. If you are having a problem understanding it, please rewind the tape and review this part of the program again.
TK MCU OF EASEL FOLLOW TALENT POINTING & DRAWING (54) 	ANNCR: Now, let's move on. We're going to make this diagram into a 4-4-1 console configuration by adding a second turntable and a tape recorder inputs and channels.
(55) 	ANNCR: Note, as these are drawn in, that both channels are identical to the first turntable channel. Input select switch, no preamp because they're high level inputs, pot, and key switch. Then they're connected to the program bus and the cue circuit.

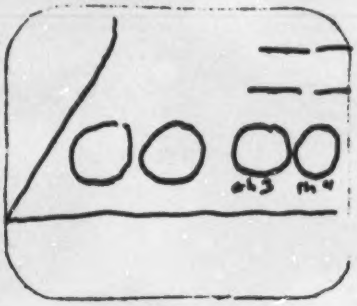
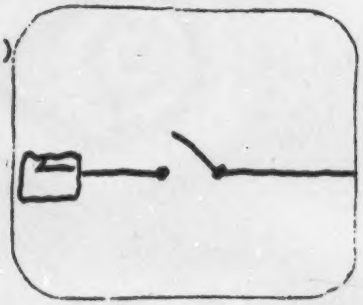
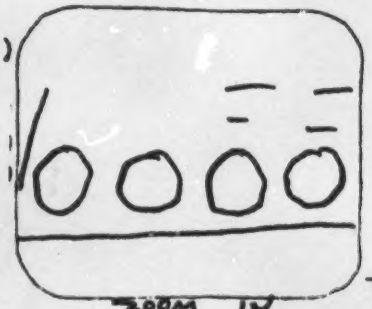
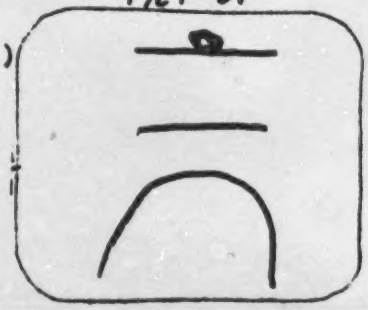
STORYBOARD

VIDEO	AUDIO
TK CU OF MIKE JACKS ON BACK OF CONSOLE (81) 	ANNCR: A studio microphone is plugged into the mike 1 input jack on the back of the console.
TK CU OF CHANNEL 1 INPUT ON EASEL (82) 	ANNCR: From that jack, it travels up to the input select switch for channel one at the front of the console.
TK CU OF CONSOLE CHANNEL 1 (83) 	ANNCR: This is the input select switch.
FOLLOW TALENT'S ACTION IN CU (84)	ANNCR: To put the signal from that mike into channel one, the input select switch is thrown to the Mike 1 position, to the left.
TK CU OF CHANNEL 1 DRAWING ON EASEL (ESPECIALLY PRE-AMP) (85) 	ANNCR: The signal is fed into the channel one pre-amplifier and on to the pot for channel one.

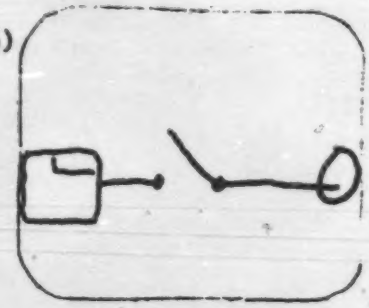
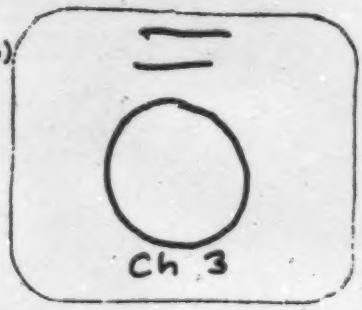
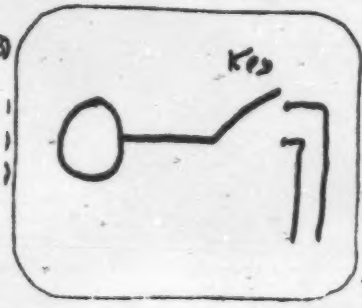
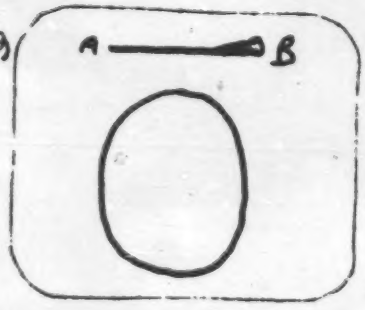
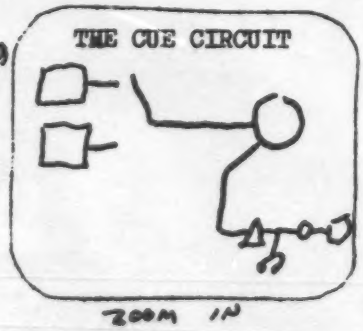
STORYBOARD

VIDEO		AUDIO
TK CU OF CONSOLE CHANNEL 1 (FOLLOW TALENT'S ACTION CU) (86)		ANNCR: The pot controls the strength of signal allowed on the rest of the channel.
(87)		ANNCR: Leaving the pot, the signal goes to the key switch for channel one, located directly above that pot.
TK CU OF EASEL RIGHT SIDE OF CHANNEL 1 (88)		ANNCR: The key switch allows us to decide whether to send the signal from that channel to the program circuit output or to the audition circuit output.
TK CU CONSOLE CHANNEL 1 (89)		ANNCR: In this example, we'll choose to key it to the right, to the program circuit, labeled"B" for "Broadcast."
TK CU EASEL OF CHANNEL 1 PAN RIGHT & FOLLOW DIAGRAM (90)		ANNCR: That is the path of the signal for studio microphone one in channel one. The other mikes operate identically in the other input select position in channel one, and in channel two.

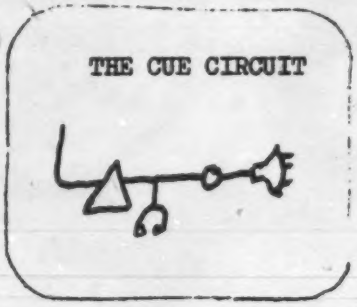
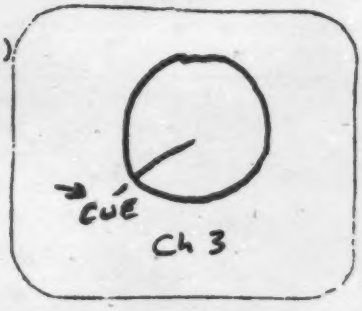
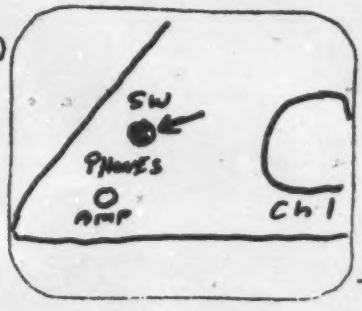
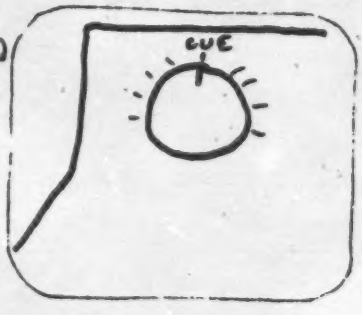
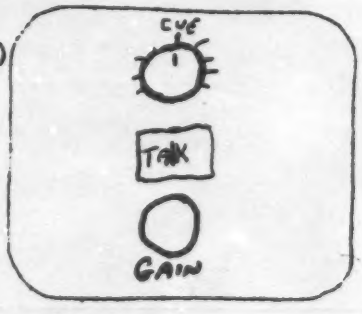
STORYBOARD

VIDEO	AUDIO
TK MCU LEFT HALF OF CONSOLE (91) 	ANNCR: Channels 3 and 4 of this console are used for cartridge tape recorders. The recorder is wired directly into the console.
TK CU OF EASEL CHANNEL 4 (92) 	ANNCR: The cartridge tape recorder, or cart, signal goes first to the input select switch.
TK CU CONSOLE LEFT HALF (93) 	ANNCR: We'll use channel three in this demonstration.
ZOOM IN TO ECU CHANNEL 3 (94)	
FOLLOW ACTION OF TALENT ON CU (95) 	ANNCR: In this case, the cart is hooked to the center position of the input select switch.

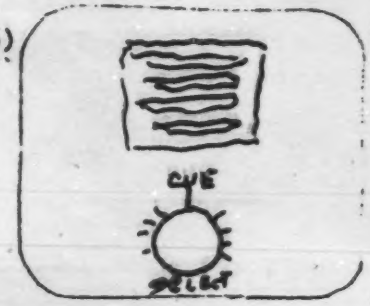
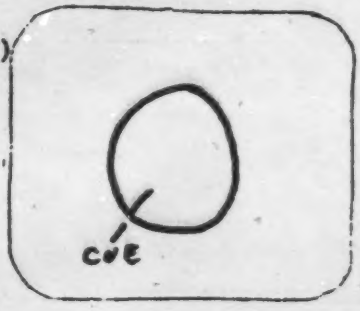
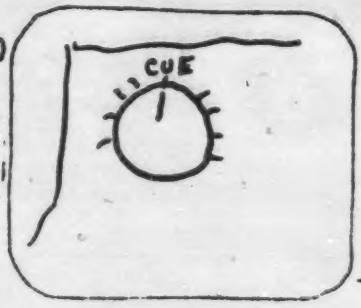
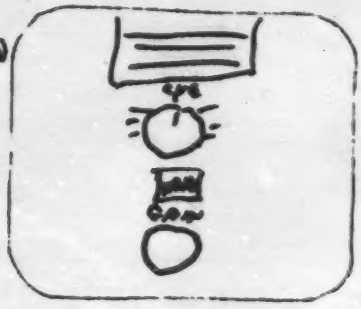
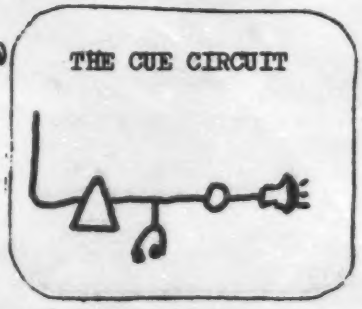
STORYBOARD

VIDEO		AUDIO
TK CU OF EASEL CHANNEL 4	(96) 	ANNCR: From the input select switch, the cart signal goes to the pot.
TK CU CONSOLE CHANNEL 3	(97) 	ANNCR: As in the other channels, the pot controls the strength of the signal allowed beyond this point.
TK CU EASEL CHANNEL 4, Right side	(98) 	ANNCR: From the pot, it goes to the key switch and we select to send it on to the program or audition circuit.
TK CU CONSOLE CHANNEL 3 FOLLOW TALENT ACTION IN CU	(99) 	ANNCR: Here, we'll send it on to the program circuit.
DIP TO BLACK FADE UP ON MCU EASEL CHANNEL 4 AND CUE CIRCUIT KEY C.G.	(100)  ZOOM IN	ANNCR: You have noted, I'm sure, that high level channels have a cue circuit tie-in.

STORYBOARD

VIDEO			AUDIO
ZOOM IN ON CUE CIRCUIT	(101)		ANNCR: The cue circuit has its own amplifier, headphone jack, gain control, and speaker in the console.
TK ECU CONSOLE CHANNEL 3 POT	(102)		ANNCR: The signal can be sent into the cue circuit by turning the pot all the way counterclockwise past the slight stop detent. You can feel it click into cue.
TK MS CONSOLE, ZOOM IN TO ECU PHONE JACK ON LEFT	(103)		ANNCR: The headphone jack for using the cue circuit is on the extreme lower left corner of the console and is connected to phone select switch in the extreme upper left of the console.
TK MCU CONSOLE LEFT ZOOM IN TO ECU PHONE SELECT IN UPPER LEFT	(104)		ANNCR: With the phone select switch in the cue position, you can hear the cue through headphones.
TK MCU CONSOLE CENTER, ZOOM IN TO CU CUE CONTROLS	(105)		ANNCR: The cue gain control is located at the bottom dead center of the console. For cueing, the cue select switch should be in "cue." The cue select switch is directly above the cue gain in the center of the console.

STORYBOARD

VIDEO		AUDIO
ZOOM IN & TILT UP TO ECU OF CUE SPEAKER AND CUE SELECT	(106) 	ANNCR: You will be able to hear the cue on the cue speaker in the center of the console as long as the board mike is not switched on. Remember, if the board mike is on, the cue speaker is muted.
TK ECU CONSOLE CHANNEL 3 POT	(107) 	ANNCR: That's how the cue system operates in this console. It starts at the cue position of the pot, and is directed to headphones and the cue speaker by these controls.
TK SLIDE	(108) 	ANNCR: The headphone select switch in the cue position.
CHANGE SLIDE	(109) 	ANNCR: The cue speaker, cue select switch, talkback button, and cue gain control.
TK CU CUE CIRCUIT ON EASEL KEY C.G.	(110) 	ANNCR: This is the way this system looks in a block diagram.
DIP TO BLACK		

CONSOLE OPERATIONS I

1. State the purpose of a broadcast console.

2. What are the three key words of the statement given above?

   a.
   b.
   c.

3. The three factors _____, _____, and _____ make up the console _____.

4. What are two classifications of inputs?

   a.
   b.

5. List the four major components of a broadcast console channel.

   a.
   b.
   c.
   d.

6. List the three main components of the output circuit of a broadcast console.

   a.
   b.
   c.

Console Oper. I cont.

7. Draw a block diagram of a console with a 4-4-1 configuration, including cue and monitor circuits. Label major component parts.

Console Oper. I cont.

8. To what three places does the broadcast signal go after leaving the program amplifier?

   a.
   b.
   c.

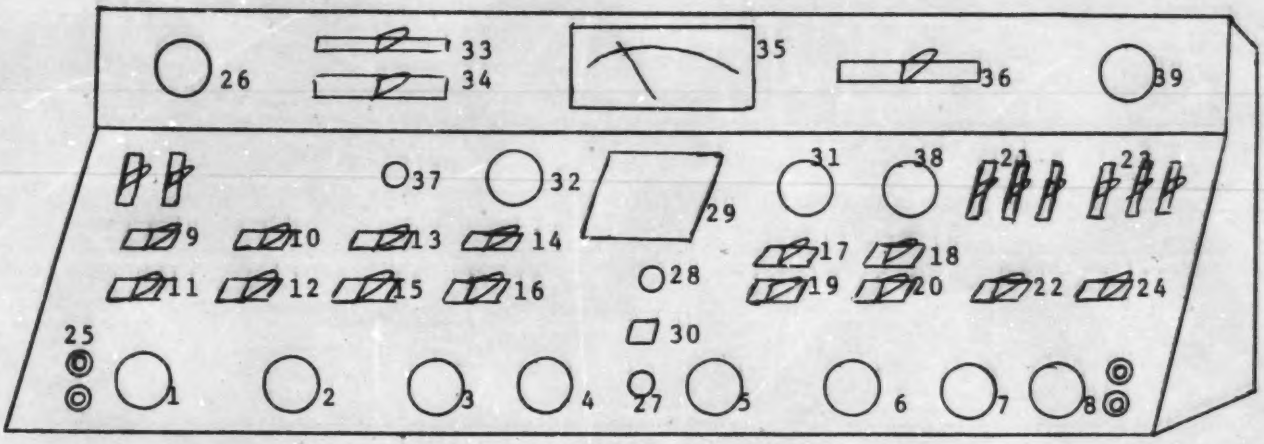
9. The difference between microphone channels and all other channels in a console is that microphone channels have a _____ and the others do not.

10. List the component parts of the monitor or cue circuit.

    a.
    b.
    c.
    d.

CONSOLE OPERATIONS II

Identify the parts of the RCA audio console as numbered in the drawing below:



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Console Oper. II cont.

40. State the configuration of the RCA console. _____

41. List, in order, the component parts of the console microphone (board mike) channel.

a.
b.
c.
d.

42. List the five components of the outputs systems of the RCA console.

a.
b.
c.
d.
e.

43. When a microphone in a studio or control room turns on, the monitor speaker in that room _____.

44. When the needle on the VU meter reads in the red (above 100% modulation) the signal is _____.

45. List, in proper order, the steps in cueing a record.

a.
b.
c.
d.
e.
f.

46. State why a turntable should be placed in gear before turning the motor on.

47. List the equipment connected to the following channels of the RCA console.

a. Channel 2 _____
b. Channel 3 _____
c. Channel 5 _____
d. Channel 6 _____
e. Channel 7 _____

Console Oper. II cont.

48. The audio playback from the video tape recorder is connected to which input select switch? _____.

49. Which Line Out switch must be thrown, and in which direction, to record audio on the videotape recorder?

_____

50. What is the normal position for the program master gain?

_____